EMSP
Environmental Management Science Program

FACTS ON FILE

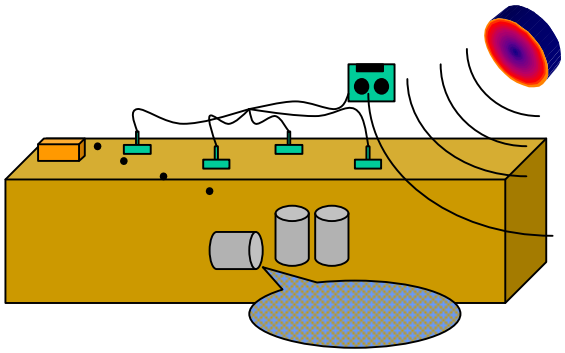
Seismic-Reflection and Ground Penetrating Radar for Environmental Site Characterization

Problem Area: Remedial Action
Scientific Category/Subcategory: Geophysics/Subsurface Imaging

Description: Researchers at the University of Kansas are marrying two well developed technologies for non-intrusively characterizing shallow subsurface features (2 to 8 meters) of suspected waste sites. The first is seismic reflection employing high dynamic range and multi-channel vibratory signals with close spaced geophones to map the near surface. The second technique employs ground penetrating radar (high frequency radio waves) that can probe shallow distances in to the soil. The reflections from each type of wave provides unique information that when combined and computer enhanced allow much greater detail as to the size and extent of buried wastes and associated plumes.

Application: The information and techniques developed from this project will directly improve the capabilities of the Subsurface Contaminants Focus Area for characterizing waste burial sites and devising cost effective strategies to address the cleanup. In particular this technology should address characterization needs associated with remedial actions in the 100, 200 and 300 Areas at Richland, and at the Idaho Chemical Processing Plant which are high risk, planned actions to be addressed in the 2007 and beyond timeframe.

Value/Benefits: Current baseline characterization technology for suspected burial sites involves invasive processes such as drilling which is time consuming, costly, provides only a limited view of the larger picture, and has the potential to exacerbate the problem. Therefore successful development of this combined characterization and computer enhancement technique provides not only time and cost savings, but also improved synergistic knowledge for devising an effective remediation strategy with minimal further threat to the environment or workers.



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Project Duration:
1997-2000
Web Information Sources:
http://www.doe.gov/html/em52/60199.html

The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. Further program information can be found at this web site: http://emsp.em.doe.gov